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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/435,748	11/08/1999	JAMES P. BUCKLEY	N19.12-0028	5623

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EXAMINER

RUTHKOSKY, MARK

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 03/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MF=11

Office Action Summary

Application No.

09/435,748

Applicant(s)

BUCKLEY ET AL.

Examiner

Mark Ruthkosky

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-44 and 52-57 is/are pending in the application.
- 4a) Of the above claim(s) 55-57 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-44 52-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 November 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 1745

DETAILED ACTION

Election/Restriction

1. Newly submitted claims 55-57 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The elected claims are to a battery while the newly added claims 55-57 are to a circuit. The applicant's arguments against this election by original presentation are not found persuasive because Inventions I, to a battery, and II, to an integrated circuit, are related as subcombinations disclosed as usable together in a single combination, a circuit, as shown in claim 55. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as a circuit which is not used in conjunction with a battery. It may be used with a separate electrical source such as a direct current. See MPEP § 806.05(d). For these reason, the inventions are distinct. Therefore, claims 55-57 stand withdrawn from consideration as being directed to a non-elected invention. The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 U.S.C. § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 1745

3. Claims 29-44 and 52-54 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The instant claims use the phrase "less than about." This phrase is indefinite as "less than" defines a lower limit, while the term "about" contradicts the value of the lower limit. As shown in the MPEP, section 2173.05(b), the phrase "at least about" is held as indefinite. Although the applicant's argue that a person of ordinary skill in the art would recognize insignificant differences in the cut-ff values, the range of specific activity of such a value is not clear in the claim.

Regarding claims 36 and 38, the word "derivative" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "derivatives"), thereby rendering the scope of the claim(s) unascertainable. The applicant argues that the word derivative takes it ordinary meaning if not defined in the specification. The definition of the word is not in question. The identity of the derivations of the electrode material are unclear and include elements not actually disclosed. Thus, the scope of the claim(s) are unascertainable. As an example, lithium cobalt oxide is a claimed formula, however, lithium cobalt manganese oxide, which may be considered a derivative, is not disclosed. The word derivative renders the claim indefinite.

Art Unit: 1745

Claim Rejections - 35 U.S.C. § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 29-44 and 52-54 stand rejected under 35 U.S.C. 103(a) as being unpatentable over “Thin Film Rechargeable Lithium and Lithium-Ion Batteries, Oak Ridge National Laboratory Bulletin, 9/1/1998 (referred to as, Oak Ridge), and further in view of Amata et al. (US 5,482,797).

Response to Arguments

6. Applicant's arguments filed 10/15/2001 have been fully considered but they are not persuasive. The applicant argues that the combined disclosures do not lead a person of skill in the art to the claimed invention. The applicant's further argue that the Oak Ridge reference leads to thin film materials, while the Yamada reference teaches particles which form aggregates. The applicant concludes that there is *no teaching, motivation, or suggestion that particle size can be relevant for structural features of the battery.*

The instant claims are to a battery comprising a positive electrode, a negative electrode and a separator wherein at least one of the electrodes has an average thickness of 10 microns and comprises electroactive particles having an average diameter of less than about 500 nm. The

Art Unit: 1745

examiner applied the Oak Ridge reference to provide a battery comprising a positive electrode, a negative electrode and a separator wherein at least one of the electrodes has an average thickness of 10 microns. The Oak Ridge reference is silent to the electrode materials having a particle size of less than 500 nm.

As the applicant's have argued, the materials of the Oak Ridge reference are thin film materials. These thing films are made up of individual particles formed by a sputtering process. While it is not provided in the reference, sputtering involves the formation of a molecular vapor, diffusion of the vapor often with a carrier gas, followed by the deposition of the vapor on a substrate. The vapor forms individual particles of molecular size which form the film. Such a process is very similar to the laser pyrolysis described in the instant application (for example, see pages 10-11.) As the mechanisms for forming the particles are very similar, the applicant's arguments suggesting that the Oak Ridge reference forms a film while the invention of the instant application forms individual particles are not persuasive. One of ordinary skill would understand that particles in the film formed by the Oak Ridge reference are less than 500 nm. To support the Oak Ridge reference, Amata et al. (US 5,482,797) was applied to teach a nonaqueous secondary battery having particles having diameters of less than 100 nm. The materials include core metals and coated materials both with a diameter of less than 100 nm. Example 8 teaches a molded cathode of LiCoO_2 with carbon and a binder molded to a cathode having a diameter of 15 nm. The combination is provided to show that it would be obvious to use particles of less than 100 nm in order to prepare an electrode with a diameter of less than 10 microns. It is an additive

Art Unit: 1745

concept that materials which are smaller than the electrodes are necessary to form the electrode structure. The claims do not limit the electroactive particles other than to have an average diameter of less than about 500 nm. One of ordinary skill would understand that the materials provided in Oak Ridge have an average particle size of less than about 500 nm and further, that one of ordinary skill in the art would have the knowledge to combine particles of less than 100 nm to form an electrode having an average thickness of less than 10 microns.

With regard to claims 39 and 41-44, the official notice is taken to be admitted prior art because the applicant did not challenge the assertion.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 1745

Examiner Correspondence

8. Any inquiry regarding this communication or a previous communication should be directed to Examiner Mark Ruthkosky, whose telephone number is (703) 305-0587 or his supervisor, Patrick Ryan, whose phone number is (703) 308-0383. Please note that Examiner Ruthkosky is out of the office the first Friday of each bi-week period.

The art unit 1745 unofficial fax number is 703-306-3186, while the PTO official fax number is 703-305-3599.

A handwritten signature in black ink, consisting of a stylized 'w' followed by a long horizontal stroke that curves upwards at the end.